

Wieland-Z21

CuZn38Pb2 | Machining brass

Material designation

EN	CuZn38Pb2 CW608N
UNS	not standardized

Chemical composition*

Cu	60.5 %
Pb	2 %
Zn	balance

*Reference values in % by weight

Physical properties*

Electrical conductivity	MS/m	14
	%IACS	24
Thermal conductivity	W/(m·K)	109
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	20.4
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
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

Material properties and typical applications

Wieland-Z21 is a machining brass which combines the contrasting material properties of machining and cold working exceptionally well. This material is therefore well established in various industries as the standard alloy for machining and cold working. It is available from stock in many dimensions.

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	fair
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	fair
Electroplating	excellent

Heat treatment

Melting range	895–900 °C
Hot working	650–750 °C
Soft annealing	450–650 °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	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	–		

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				
	from	to	min.	min.	max.	min.	min.	max.	min.	max.			
M	–	20	as manufactured – without specified mechanical properties										
R340	–	10	340	–	250	35	–	–	–	–			
H080	–	10	–	–	–	–	80	110	75	105			
R410	–	10	410	–	250	15	–	–	–	–			
H105	–	10	–	–	–	–	105	140	100	135			
R470	–	5	470	–	350	10	–	–	–	–			
H135	–	5	–	–	–	–	135	–	130	–			

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	–			

Wieland-Werke AG | Graf-Arco-Straße 36 | 89079 Ulm | Germany
 info@wieland.com | wieland.com

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